

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claim(s) 23 - 26** is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Baranda et al. U.S. Patent No. 6364061 in view of Yaginuma JP Application No. 8-247221 and Hull U.S. Patent No. 4647278.

3. **Regarding claim 23**, Baranda et al. discloses an elevator system, comprising:

4. a cab 14 that moves at a contract speed;

5. a belt 22 that supports the cab 14 and facilitates movement of the cab 14,

6. at least one sheave 24 over which the belt 22 travels as the cab 14 moves, the sheave 24 having a diameter of at least 320 mm due to elevator safety codes in Column 1, Lines 42-45.

7. Baranda et al. is silent concerning the belt having a plurality of spaced grooves on at least one side of the belt, each of the grooves including a fillet at an edge of each groove; and

8. the sheave having a diameter that has a relationship to a width of the grooves on the belt so that a ratio of the groove width to the sheave diameter is less than about .015,

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9. wherein the ratio of the groove width to the sheave diameter is selected dependent on the contract speed such that the ratio is (i) within a first range when the contract speed is above a first speed or (ii) within a second, higher range when the contract speed is a second, slower speed below the first speed.
10. Yaginuma teaches a belt 10 having a plurality of spaced grooves 13 on at least one side of the belt 10; and
11. a width b of the grooves 13 on the belt 10 to be 1.5 mm in Paragraph [0009].
12. Hull further teaches a belt 20 with a plurality of spaced grooves 28 one at least one side of the belt 20, each of the grooves including a fillet 46 at an edge of each groove 28.
13. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the belt taught by Yaginuma to the elevator drive sheave disclosed by Baranda et al. yielding a groove width to sheave diameter ratio of .015 to reduce the noise of impact generated when the belt makes contact with the drive sheave.
14. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide fillets taught by Hull to the belt disclosed by Baranda et al. to improve the belt life and reduce the noise during operation.
15. It would have been obvious to one of ordinary in the art at the time of the invention was made to select a ratio of the groove width to the sheave diameter (i) within a first range when the contract speed is above a first speed or (ii) within a second, higher range when the contract speed is a second, slower speed below the first speed, since it has been held that where the general conditions of a claim are disclosed

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in the prior art, discovering the optimum or workable range involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

16. **Regarding claim 24**, Baranda et al. further discloses a drive sheave to be at least 320 mm due to elevator safety codes in Column 1, Lines 42-45.

17. Baranda et al. is further silent concerning the belt having grooves and a ratio of the groove width to the sheave diameter less than about .008.

18. Yaginuma further teaches the width b of the grooves 13 on the belt 10 to be 1.5 mm in Paragraph [0009].

19. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the belt taught by Yaginuma to the elevator drive sheave disclosed by Baranda et al. yielding a groove width to sheave diameter ratio of .005 to reduce the noise of impact generated when the belt makes contact with the drive sheave.

20. **Regarding claim 25**, Baranda et al. further discloses a drive sheave to be at least 320 mm due to elevator safety codes in Column 1, Lines 42-45.

21. Baranda et al. is further silent concerning the belt having grooves and a ratio of the groove width to the sheave diameter is between .001 and .015.

22. Yaginuma further teaches the width b of the grooves 13 on the belt 10 to be 1.5 mm in Paragraph [0009].

23. It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the belt taught by Yaginuma to the elevator drive sheave disclosed by Baranda et al. yielding a groove width to sheave diameter ratio of .005 to reduce the noise of impact generated when the belt makes contact with the drive sheave.

24. **Regarding claim 26**, Baranda et al. is further silent concerning fillets at the edges of each groove having a radius of curvature that's is between about 0.1 mm and about 0.5 mm.

25. Hull further teaches the fillets 46 each having a radius of curvature of 0.047 in (1.1938 mm) which is between about 0.1 mm and about 0.5 mm.

26. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide fillets taught by Hull to the belt disclosed by Baranda et al. to improve the belt life and reduce the noise during operation.

Response to Arguments

27. Applicant's arguments filed 2 September 2009 have been fully considered but they are not persuasive.

28. In response to applicant's argument that the prior art would incur the opposite of what is claimed with respect to the ratio of groove width to sheave diameter when the speed of travel or contract speed of the elevator car is above a first speed and at a speed below that first speed, the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art and, further, discovering the optimum or workable range involves only routine skill in the art. *In re Aller*, 105 USPQ 233 and as acknowledged by applicant's disclosure (Published application, Para. 0036).

29. The appended PTO-892 is included to correct for the inadvertent listing of the reference of Fukai et al (6,264,061) in lieu of Baranda et al (6,364,061) in the Notice of References Cited mailed on 2 November 2005.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Kruer whose telephone number is 571.272.5913. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Q. Nguyen, can be reached on 571.272.6952. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/John Q. Nguyen/
Supervisory Patent Examiner, Art Unit 3654

/Stefan Kruer/
Examiner, Art Unit 3654
12 January 2010